CLAIMS

1. A composition of matter, comprising: a hydrogel polymer containing a sugar, said hydrogel being the polymerization reaction product of a sugar compound with a polymerizable double bond , a crosslinker with two or more polymerizable double bonds, and a third compound with a polymerizable double bond and a group selected from the group consisting of amino or carboxyl groups.
2. The composition according to claim 1, wherein said polymer is generally represented by the structure of FIGURE 1.
3. The composition according to claim 1, wherein said crosslinker is selected from the group consisting of bis- acrylamide, bis-acrylate, or bis-vinyl compounds.
4. The composition according to claim 1, wherein said third compound is an acryl-substituted oligonucleotide.
5. The composition according to claim 1, wherein said sugar compound is a sugar selected from the group consisting of sugar acrylate or methacrylate as represented by (1).
6. The composition according to claim 1, wherein said sugar compound is selected from the group consisting of acryl-monosaccharides, disaccharides, oligosaccharides, or polysaccharides.
7. The composition according to claim 1, wherein said sugar compound is an acrylate derivative of an oligohydroxy compound.
8. The composition according to claim 1, wherein said sugar compound is 6-acryloyl-β-O-methylgalactopyranoside.
9. The composition according to claim 1, wherein said sugar compound is selected from the group consisting of furanose or pyranose sugars.
10. The composition according to claim 1, wherein said sugar compound is an α or β anomer.

11. The composition according to claim 5, wherein R_1 of said sugar acrylate (1) contains a substituent selected from the group consisting of H, aliphatic, aromatic, cycloaliphatic, or carbohydrate.

12. The composition according to claim 1,wherein said hydrogel polymer has a water content of at least 90%.

13. The composition according to claim 1, wherein said hydrogel polymer has a pore size of 0.1-10μ or larger.

14. The composition according to claim 1, wherein said hydrogel polymer has pore size allowing for diffusion of molecules two microns in size into said hydrogel.

15. The composition according to claim 1, wherein said third compound is selected from the group consisting of acrylic or methacrylic acids, amides or derivatives thereof.

16. The composition according to claim 1, wherein said third compound is selected from the group whereby R_9 of FIGURE 1 is OH, amino, or an aminoalkylamine.

17. The composition according to claim 15, wherein said third compound is selected from the group consisting of an N-propylamino-acrylamide or N-propylamino-methacrylamide.

18. The composition according to claim 1, wherein said third compound is a 2-acrylamidohydroxyacetic acid.

19. A composition of matter, comprising: a hydrogel polymer containing a sugar, said hydrogel being the polymerization reaction product of a sugar acrylate, a bis-acrylamide cross linker and an aminoacrylic third compound selected from the groups of claim 17.

20. A composition of matter, comprising: a hydrogel polymer containing a sugar, said hydrogel being the polymerization reaction product of a sugar acrylate, a bis-acrylamide cross linker and an acrylamidoglycolic acid.

21. The composition according to claim 1, wherein said hydrogel polymer comprises amino groups on the backbone of said polymer.

22. The composition according to claim 1, wherein said hydrogel polymer comprises carboxyl groups on said backbone of said polymer.

23. A composition of matter comprising the reaction product of said amino groups on said backbone of said polymer of claim 21 with a member of the group consisting of oligonucleotides or proteins.

24. The composition according to claim 23, wherein said oligonucleotide has 5' substituents selected from the group consisting of amino, aldehydic, carboxyl or phosphoro groups.

25. The composition according to claim 23,wherein said protein comprises CY3-labled Straphyloccal enterotoxin B (SEB).

26. A composition of matter comprising the reaction product of said carboxyl groups on said backbone of said polymer of claim 22, with a group consisting of oligonucleotides or proteins.

27. A method for assaying biomolecules, comprising the steps of:

A. functionalizing a support with acrylate groups;

B. reacting said acrylate groups of said support with a hydrogel polymer selected from the the group consisting of the composition of claims 1, 18, or 19, wherein said hydrogel is linked to said glass plate through said acrylate groups;

C. reacting said biomolecule to be assayed with said hydrogel to form a covalent bond between said biomolecule and said hydrogel,

D. assaying said biomolecule covalently bonded to said hydrogel.

28. The method according to claim 27, wherein said biomolecule is a DNA molecule.

29. The method according to claim 28, wherein said DNA comprises up to 100,000 nucleotide base units.

30. The method according to claim 27, wherein said biomolecule is a protein.

31. The method according to claim 27, wherein said biomolecule assay is based on biomolecule having a fluorophrone group.

32. The method according to claim 27, wherein said biomolecule is CY3-Straphylococcal enterotoxin B (SEB).

33. The method according to claim 24, wherein said biomolecule assay is based on fluorescence, nuclear, magnetic or optical methods commonly employed.

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